

**Abstract**

The present invention relates to plant cells and plants, which are genetically modified, whereby the genetic modification leads to an increase in the activity of a starch-phosphorylating OK1 protein in comparison to the corresponding wild type plant cells or wild type plants that have not been genetically modified. In addition, the present invention concerns means and methods for the manufacture of such plant cells and plants. These types of plant cells and plants synthesise a modified starch. Therefore, the present invention also concerns the starches synthesised from the plant cells and plants according to the invention, methods for manufacturing these starches, and the manufacture of starch derivatives of these modified starches, as well as flours containing starches according to the invention.

Furthermore, the present invention also relates to nucleic acids, coding starch-phosphorylating OK1 proteins, vectors, host cells, plant cells, and plants containing such nucleic acid molecules. In addition, the present invention relates to OK1 proteins that have starch-phosphorylating activity.